

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Applicants: David B. Crosbie, Benjamin J. Walter, Philip M. Bates
Application No.: Not yet assigned Group: Not yet assigned
Filed: Herewith Examiner: Not yet assigned
For: METHODS AND SYSTEMS FOR CLOCK SYNCHRONIZATION
ACROSS WIRELESS NETWORKS

Date: 12/21/01

EXPRESS MAIL LABEL NO. EV 005375861 US

PRELIMINARY AMENDMENT

Assistant Commissioner for Patents
Washington, D.C. 20231

Sir:

This Preliminary Amendment is being filed together with the above-referenced patent application to correct an inadvertent typographical error in Claim 10 and inadvertent typographical errors in the specification.

Please amend the application as follows:

In the Specification

Amendments to the specification are indicated in the attached "Marked Up Version of Amendments" (pages i - ii).

Please replace the paragraph at page 2, lines 12 through 26 with the following paragraph:

Both the IEEE 802.11 and ETSI HIPERLAN/2 protocols differ from the

Bluetooth protocol, in that the IEEE 802.11 and ETSI HIPERLAN/2 protocols use a spread spectrum rather than a frequency hopping approach to sharing a channel between noncoordinated users (e.g., users of the same spectral band that make no effort to avoid cross-interference). To coordinate nodes within a IEEE 802.11 or HIPERLAN/2 network a series of timing beacons are used. These beacons ensure that the timing of the nodes can be synchronized to that of the access point for that network. The HIPERLAN/2 protocol differs from the IEEE 802.11 protocol in that the HIPERLAN/2 protocol uses an Asynchronous Transfer Mode (ATM) approach. Thus the HIPERLAN/2 protocol provides for the breaking of incoming IP packets into a number of smaller packets that are transferred to the destination node in a time division approach (e.g., TDMA) manner which avoids collisions. The approach of the IEEE 802.11 protocol attempts to reserve the wireless medium in order to send the whole packet, and if there is a packet collision, the IEEE 802.11 approach is to back off an amount of time (e.g., of random duration) before retrying.

Please replace the paragraph at page 3, lines 2 through 5 with the following paragraph:

Though the medium sharing mechanism varies between the different radio (wireless communication) protocols (as described above for Bluetooth, IEEE 802.11, ETSI HIPERLAN/2) all require clock synchronization between access points in order to perform seamless hand-offs of mobile devices between access points.

Please replace the paragraph at page 3, lines 6 through 16 with the following paragraph:

The present invention provides a method for wireless synchronization of time division (e.g., TDMA) and spread spectrum wireless communications (e.g., IEEE 802.11 and ETSI HIPERLAN/2) networks. The approach of the present invention may be used to synchronize a Bluetooth network, but it may be applied to a wide range of wireless protocols and technologies, such as, but not limited to, DECT (Digital Enhanced Cordless Communications), GPRS (General Packet Radio Service) based communications, IEEE

802.11, and ETSI HIPERLAN/2. The present invention provides for the synchronization of access points in WLAN's (based on any of the above protocols) so that mobile devices can more readily transfer from one access point to another without requiring the mobile device to resynchronize or establish a new synchronization with the target (transferred to) access point.

In the Claims

Please amend Claim 10. Amendments to the claims are indicated in the attached "Marked Up Version of Amendments" (page i-ii).

10. (Amended) The method of Claim 9, wherein the wireless local area network is based on a spread-spectrum wireless communications protocol.

REMARKS

No new matter is being introduced by this Preliminary Amendment. Acceptance is respectfully requested. If the Examiner feels that a telephone conference would expedite prosecution of this case, the Examiner is invited to call the undersigned at (978) 341-0036.

Respectfully submitted,

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Dated: December 21, 2001

MARKED UP VERSION OF AMENDMENTSSpecification Amendments Under 37 C.F.R. § 1.121(b)(1)(iii)

Replace the paragraph at page 2, lines 12 through 26 with the below paragraph marked up by way of bracketing and underlining to show the changes relative to the previous version of the paragraph.

Both the IEEE 802.11 and ETSI HIPERLAN/2 protocols differ from the Bluetooth protocol, in that the IEEE 802.11 and ETSI HIPERLAN/2 protocols use a spread spectrum rather than a frequency hopping approach to sharing a channel between noncoordinated users (e.g., users of the same spectral band that make no effort to avoid cross-interference). To coordinate nodes within a IEEE 802.11 or HIPERLAN/2 network a series of timing beacons are used. These beacons ensure that the timing of the nodes can be synchronized to that of the access point for that network. The HIPERLAN/2 protocol differs from the IEEE 802.11 protocol in that the HIPERLAN/2 protocol uses an Asynchronous Transfer Mode (ATM) approach. Thus the HIPERLAN/2 protocol provides for the breaking of incoming IP packets into a number of smaller packets that are transferred to the destination node in a time division[s] approach (e.g., TDMA) manner which avoids collisions. The approach of the IEEE 802.11 protocol attempts to reserve the wireless medium in order to send the whole packet, and if there is a packet collision, the IEEE [802.3]802.11 approach is to back off an amount of time (e.g., of random duration) before retrying.

Replace the paragraph at page 3, lines 2 through 5 with the below paragraph marked up by way of bracketing and underlining to show the changes relative to the previous version of the paragraph.

Though the medium sharing mechanism varies between the different radio (wireless communication) protocols (as described above for Bluetooth, IEEE [802.3]802.11, ETSI

HIPERLAN/2) all require clock synchronization between access points in order to perform seamless hand-offs of mobile devices between access points.

Replace the paragraph at page 3, lines 6 through 16 with the below paragraph marked up by way of bracketing and underlining to show the changes relative to the previous version of the paragraph.

The present invention provides a method for wireless synchronization of time division (e.g., TDMA) and spread spectrum wireless communications (e.g., IEEE [802.3]802.11 and ETSI HIPERLAN/2) networks. The approach of the present invention may be used to synchronize a Bluetooth network, but it may be applied to a wide range of wireless protocols and technologies, such as, but not limited to, DECT (Digital Enhanced Cordless Communications), GPRS (General Packet Radio Service) based communications, IEEE 802.11, and ETSI HIPERLAN/2. The present invention provides for the synchronization of access points in WLAN's (based on any of the above protocols) so that mobile devices can more readily transfer from one access point to another without requiring the mobile device to resynchronize or establish a new synchronization with the target (transferred to) access point.

Claim Amendments Under 37 C.F.R. § 1.121(c)(1)(ii)

10. (Amended) The method of Claim [8]9, wherein the wireless local area network is based on a spread-spectrum wireless communications protocol.